

[Designation of Document] Claims

[Claim 1]

An information processing method of transmitting/receiving and processing data among a plurality of processing modules in an information processing system in which the plurality of processing modules each having a memory for storing a list composed of values is logically connected to one another in a loop, comprising the steps of:

allowing each of the processing modules to transmit a first list composed of values stored in the memory of said each of the processing module to the other processing modules in the information processing system;

allowing each of the processing modules to receive at least one second list composed of values transmitted to said each of the processing module, from the other processing module;

allowing each of the processing modules to compare the values of the second list with the values of the first list; and

allowing each of the processing modules to increase a counter corresponding to the value of the first list by one, when said value of the second list is identical to said value of the first list.

[Claim 2]

An information processing method of transmitting/receiving and processing data among a plurality of processing modules in an information processing system in which the plurality of processing modules each having a memory for storing a list composed of values is logically connected to one another in a loop, comprising the steps of:

allowing each of the processing modules to transmit a first list which is composed of pairs of a value and the number of value stored in the memory of said each of the processing module, to the other processing modules in the information processing system;

allowing each of the processing modules to receive at

least one second list which is composed of the pairs of value and the number of values transmitted to said each of the processing module , from the other processing module;

allowing each of the processing modules to compare the values of the second list with the values of the first list; and

allowing each of the processing modules to increase a counter corresponding to the value of the first list by the number of the values corresponding to the value of the second list, when said value of the second list is identical to said value of the first list.

[Claim 3]

An information processing method of transmitting/receiving and processing data among a plurality of processing modules in an information processing system in which the plurality of processing modules each having a memory for storing a list composed of values is logically connected to one another in a loop, comprising the steps of:

allowing each of the processing modules to transmit a first list composed of values stored in the memory of said each of the processing module to the other processing modules in the information processing system;

allowing each of the processing modules to receive at least one second list composed of values transmitted to said each of the processing module, from the other processing module;

allowing each of the processing modules to compare the values of the second list with the values of the first list; and

allowing each of the processing modules to increase the count of the value of the first list, which ranks immediately next to the value of the second list, by one, when said value of the first list ranks lower than said value of the second list.

[Claim 4]

An information processing method of

transmitting/receiving and processing data among a plurality of processing modules in an information processing system in which the plurality of processing modules each having a memory for storing a list composed of values is logically connected to one another in a loop, comprising the steps of:

- allowing each of the processing modules to transmit a first list, which is composed of pairs of a value and the number of value stored in the memory of said each of the processing module , to the other processing modules in the information processing system;

- allowing each of the processing modules to receive at least one second list which is composed of the pairs of a value and the number of value transmitted to said each of the processing module , from the other processing module;

- allowing each of the processing modules to compare the values of the second list with the values of the first list; and

- allowing each of the processing modules to increase a counter corresponding to the value of the first list ranked immediately next to the value in the second list by the number of the values corresponding to the value of the second list, when said value of the first list ranks lower than said value of the second list.

[Claim 5]

An information processing method of transmitting/receiving and processing data among a plurality of processing modules in an information processing system in which the plurality of processing modules each having a memory for storing a list composed of values is logically connected to one another in a loop, comprising the steps of:

- allowing each of the processing modules to transmit a first list composed of values stored in the memory of said each of the processing module to the other processing modules in the information processing system;

- allowing each of the processing modules to receive at

least one second list composed of values transmitted to said each of the processing module, from the other processing module;

allowing each of the processing modules to cancel a value of the second list when said value of the second list exists in the first list,, and, when the identical values exist in two or more second lists, allowing each of the processing modules to cancel the value of one or more second lists, which appear later among the two or more second lists; and

allowing each of the processing modules to increase a counter corresponding to the value of the first list, which ranks immediately next to the value of the second list, by one, when said value of the first list ranks lower than said value of the second list.

[Claim 6]

The information processing method according to any one of Claims 1 to 5, wherein each of the processing modules stores table-format data represented by an array of records including field values contained in an information field in the memory in a form of a value list in which the field values are stored in order of field value numbers corresponding to the field values and an array of pointers in which information for specifying the field value numbers is stored in order of records, and

wherein said list composed of the values is said value list, which constructs the table-format data.

[Claim 7]

An information processing system which includes a plurality of processing modules each having a memory for storing a list composed of values and a transmitting path for logically connecting the plurality of processing modules to one another in a loop and transmits/receives and processes data among the plurality of processing modules, each of the processing modules comprising:

a means which transmits a first list composed of values stored in the memory of said each of the processing module to the other processing modules in the information processing

system;

a means which receives at least one second list composed of values transmitted to said each of the processing module, from the other processing module;

a means which compares the values of the second list with the values of the first list; and

a means which, when a value of the second list is identical to a value of the first list, increases a counter corresponding to the identical value of the first list by one.

[Claim 8]

An information processing system which includes a plurality of processing modules each having a memory for storing a list composed of values and a transmitting path for logically connecting the plurality of processing modules to one another in a loop and transmits/receives and processes data among the plurality of processing modules, each of the processing modules comprising:

a means which transmits a first list which is composed of pairs of a value and the number of value stored in the memory of said each of the processing module to the other processing modules in the information processing system;

a means which receives at least one second list which is composed of the pairs of values and the number of value transmitted to said each of the processing module, from the other processing module;

a means which compares the values of the second list with the values of the first list; and

a means which, when a value of the second list is identical to a value of the first list, increases a counter corresponding to the identical value of the first list by the number of the values corresponding to the identical value of the second list.

[Claim 9]

An information processing system which includes a plurality of processing modules each having a memory for storing a list composed of values and a transmitting path for logically

connecting the plurality of processing modules to one another in a loop and transmits/receives and processes data among the plurality of processing modules, each of the processing modules comprising:

a means which transmits a first list composed of values stored in the memory of said each of the processing module to the other processing modules in the information processing system;

a means which receives at least one second list composed of values transmitted to said each of the processing module, from the other processing module;

a means which compares the values of the second list with the values of the first list; and

a means which, when a value which ranks lower than a value of the second list exists in the first list, increases a counter corresponding to the value of the first list, which ranks immediately next to the value of the second list, by one.

[Claim 10]

An information processing system which includes a plurality of processing modules each having a memory for storing a list composed of values and a transmitting path for logically connecting the plurality of processing modules to one another in a loop and transmits/receives and processes data among the plurality of processing modules, each of the processing modules comprising:

a means which transmits a first list, which is composed of pairs of a value and the number of value stored in the memory of said each of the processing module, to the other processing modules in the information processing system;

a means which receives at least one second list which is composed of the pairs of value and the number of value transmitted to said each of the processing module, from the other processing module;

a means which compares the values of the second list with the values of the first list; and

a means which, when a value which ranks lower than a value of the second list exists in the first list, increases a counter corresponding to the value of the first list by the number of the values corresponding to the value of the second list.

[Claim 11]

An information processing system which includes a plurality of processing modules each having a memory for storing a list composed of values and a transmitting path for logically connecting the plurality of processing modules to one another in a loop and transmits/receives and processes data among the plurality of processing modules, each of the processing modules comprising:

a means which transmits a first list composed of values stored in the memory of said each of the processing module to the other processing modules in the information processing system;

a means which receives at least one second list composed of values transmitted to said each of the processing module, from the other processing module;

a means which, when a value of the second list exists in the first list, cancels the value of the second list, and, when the identical values exist in two or more second lists, cancels the value of one or more second lists, which appear later among the two or more second lists; and

a means which, when a value which ranks lower than a value of the second list exists in the first list, increases a counter corresponding to the value of the first list, which ranks immediately next to the value of the second list, by one.

[Claim 12]

The information processing system according to any one of Claims 7 to 11, wherein each of the processing modules comprises the memory which stores table-format data represented by an array of records including field values contained in an information field in a form of a value list in which the field values are stored in order of field value numbers corresponding

to the field values and an array of pointers in which information for specifying the field value numbers is stored in order of records, and

wherein said list composed of the values is the value list, which constructs the table-format data.

[Claim 13]

A program for embodying the following functions in an information processing system which includes a plurality of processing modules each having a memory for storing a list composed of values and a transmitting path for logically connecting the plurality of processing modules to one another in a loop and transmits/receives and processes data among the plurality of processing modules, the functions being executed by a computer of each of the processing modules and comprising:

a function which transmits a first list composed of values stored in the memory of said each of the processing module to the other processing modules in the information processing system;

a function which receives at least one second list composed of values transmitted to said each of the processing module, the other processing modules;

a function which compares the values of the second list with the values of the first list; and

a function which, when a value of the second list is identical to a value of the first list, increases a counter corresponding to the identical value of the first list by one.

[Claim 14]

A program for embodying the following functions in an information processing system which includes a plurality of processing modules each having a memory for storing a list composed of values and a transmitting path for logically connecting the plurality of processing modules to one another in a loop and transmits/receives and processes data among the plurality of processing modules, the functions being executed by a computer of each of the processing modules and comprising:



a function which transmits a first list which is composed of pairs of a value and the number of value stored in the memory of said each of the processing module to the other processing modules in the information processing system;

a function which receives at least one second list which is composed of the pairs of value and the number of value transmitted to said each of the processing module, from the other processing module;

a function which compares the values of the second list with the values of the first list; and

a function which, when a value of the second list is identical to a value of the first list, increases a counter corresponding to the identical value of the first list by the number of the values corresponding to the value of the second list.

[Claim 15]

A program for embodying the following functions in an information processing system which includes a plurality of processing modules each having a memory for storing a list composed of values and a transmitting path for logically connecting the plurality of processing modules to one another in a loop and transmits/receives and processes data among the plurality of processing modules, the functions being executed by a computer of each of the processing modules and comprising:

a function which transmits a first list composed of values stored in the memory of said each of the processing module to the other processing modules in the information processing system;

a function which receives at least one second list composed of values transmitted to said each of the processing module, from the other processing module;

a function which compares the values of the second list with the values of the first list; and

a function which, when a value which ranks lower than a value of the second list exists in the first list, increases

a counter corresponding to the value of the first list, which ranks immediately next to the value of the second list, by one.

[Claim 16]

A program for embodying the following functions in an information processing system which includes a plurality of processing modules each having a memory for storing a list composed of values and a transmitting path for logically connecting the plurality of processing modules to one another in a loop and transmits/receives and processes data among the plurality of processing modules, the functions being executed by a computer of each of the processing modules and comprising:

- a function which transmits a first list, which is composed of pairs of a value and the number of value stored in the memory of said each of the processing module, to the other processing modules in the information processing system;

- a function which receives at least one second list which is composed of the pairs of value and the number of value transmitted to said each of the processing module, from the other processing module;

- a function which compares the values of the second list with the values of the first list; and

- a function which, when a value which ranks lower than a value of the second list exists in the first list, increases a counter corresponding to the value of the first list ranked immediately next to the value in the second list by the number of the values corresponding to the value of the second list.

[Claim 17]

A program for embodying the following functions in an information processing system which includes a plurality of processing modules each having a memory for storing a list composed of values and a transmitting path for logically connecting the plurality of processing modules to one another in a loop and transmits/receives and processes data among the plurality of processing modules, the functions being executed by a computer of each of the processing modules and comprising:

a function which transmits a first list composed of values stored in the memory of said each of the processing module to the other processing modules in the information processing system;

a function which receives at least one second list composed of values transmitted to said each of the processing module from other processing module;

a function which, when a value of the second list exists in the first list, cancels the value of the second list, and, when the identical values exist in two or more second lists, cancels the value of one or more second lists, which appear later among the two or more second lists; and

a function which, when a value which ranks lower than a value of the second list exists in the first list, increases a counter corresponding to the value of the first list, which ranks immediately next to the value of the second list, by one.

[Claim 18]

The program according to any one of Claims 13 to 17, wherein said each of the processing modules comprises a memory which stores table-format data represented by an array of records including field values contained in an information field in a form of a value list in which the field values are stored in order of field value numbers corresponding to the field values and an array of pointers in which information for specifying the field value numbers is stored in order of records, and

wherein said list composed of the values is said value list, which constructs the table-format data.

[Claim 19]

A computer-readable recoding medium having the program according to any one of Claims 13 to 18 recorded thereon.